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Mathematical Methods in the Physical Sciences Mathematical Methods in the Physical Sciences The Connection of the Physical Sciences *The Invention of Physical Science On the Connexion of the Physical Sciences Statistical Data Analysis for the Physical Sciences Mechanism of the Heavens Mary Somerville and the Cultivation of Science, 1815–1840* **Nineteenth-Century Poetry and the Physical Sciences On the Connection of the Physical Sciences Before Big Science** Water Works *Mathematics for Physical Science and Engineering* Linear Algebra as an Introduction to Abstract Mathematics **Physical Geography** The Cambridge History of Science: Volume 6, The Modern Biological and Earth Sciences **Physics and Psychics Invitation to Invent** *The Cambridge History of Science: Volume 5, The Modern Physical and Mathematical Sciences* **Visions of Science Data Analysis for Physical Scientists** Models as Mediators *Physical Science* **On the Connexion of the Physical Sciences Project Hail Mary** Mathematical Methods in Physics *On Molecular and Microscopic Science* Notable Women in the Physical Sciences *Essential Mathematical Methods for the Physical Sciences* Before Big Science **Personal Recollections, from Early Life to Old Age, of Mary Somerville A Consumer's Guide to Archaeological Science Maria Mitchell and the Sexing of Science** *A First Course in Wavelets with Fourier Analysis Weather Reporter* Vulnerability Assessment of Physical Protection Systems *Physical Properties of Materials, Third Edition On the Connection of the Physical Sciences Mathematics for Physicists* Nineteenth-Century Poetry and the Physical Sciences

The Connection of the Physical Sciences Aug 29 2022
A Consumer's Guide to Archaeological Science Feb 29 2020 Many archaeologists, as primarily social scientists, do not have a background in the natural sciences. This can pose a problem because they need to obtain chemical and physical analyses on samples to perform their research. This manual is an essential source of information for those students without a background in science, but also a comprehensive overview that those with some understanding of archaeological science will find useful. The manual provides readers with the knowledge to use archaeological science methods to the best advantage. It describes and explains the analytical techniques in a manner that the average archaeologist can understand, and outlines clearly the requirements, benefits, and limitations of each possible method of analysis, so that the researcher can make informed choices. The work includes specific information about a variety of dating techniques, provenance studies, isotope analysis as well as the analysis of organic (lipid and protein) residues and ancient DNA. Case studies illustrating applications of these approaches to most types of archaeological materials are presented and the instruments used to perform the analyses are described. Available destructive and non-destructive approaches are presented to help archaeologists select the most effective technique for gaining the target information from the sample. Readers will reach for this manual whenever they need to decide how to best analyze a sample, and how the analysis is performed.
Weather Reporter Nov 27 2019 Weather Reporter, a second-grade Earth and space science unit, provides students with opportunities in a scenario-based approach to observe, measure, and analyze weather phenomena. The overarching concept of change reinforces students' decisions as they learn about the changes in the Earth's weather and observe, measure, and forecast the weather. Weather Reporter was developed by the Center for Gifted Education at The College of William and Mary to offer advanced curriculum supported by years of research. The Center's materials have received national recognition from the United States Department of Education and the National Association for Gifted Children, and they are widely used both nationally and internationally. Each of the books in this series offers curriculum that focuses on advanced content and higher level processes. The science units contain simulations of real-world problems, and students experience the work of real science by using data-handling skills, analyzing information, and evaluating results. The mathematics units provide sophisticated ideas and concepts, challenging extensions, higher order thinking skills, and opportunities for student exploration based on interest. These materials are a must for any teacher seeking to challenge and engage learners and increase achievement. Grade 2
Notable Women in the Physical Sciences Jul 04 2020 Biographical essays on 96 noted world and American women scientists who have made significant contributions to the physical sciences from antiquity to the present.
A First Course in Wavelets with Fourier Analysis Dec 29 2019 A comprehensive, self-contained treatment of Fourier analysisand wavelets—now in a new edition Through expansive coverage and easy-to-follow explanations, AFirst Course in Wavelets with Fourier Analysis, SecondEdition provides a self-contained mathematical treatment of Fourieranalysis and wavelets, while uniquely presenting signal analysisapplications and problems. Essential and fundamental ideas arepresented in an effort to make the book accessible to a broadaudience, and, in addition, their applications to signal processingare kept at an elementary level. The book begins with an introduction to vector spaces, innerproduct spaces, and other preliminary topics in analysis.Subsequent chapters feature: The development of a Fourier series, Fourier transform, anddiscrete Fourier analysis Improved sections devoted to continuous wavelets andtwo-dimensional wavelets The analysis of Haar, Shannon, and linear spline wavelets The general theory of multi-resolution analysis Updated MATLAB code and expanded applications to signalprocessing The construction, smoothness, and computation of Daubechies'wavelets Advanced topics such as wavelets in higher dimensions,decomposition and reconstruction, and wavelet transform Applications to signal processing are provided throughout thebook, most involving the filtering and compression of signals fromaudio or video. Some of these applications are presented first inthe context of Fourier analysis and are later explored in thechapters on wavelets. New exercises introduce additionalapplications, and complete proofs accompany the discussion of eachpresented theory. Extensive appendices outline more advanced proofsand partial solutions to exercises as well as updated MATLABroutines that supplement the presented examples. A First Course in Wavelets with Fourier Analysis, SecondEdition is an excellent book for courses in mathematics andengineering at the upper-undergraduate and graduate levels. It isalso a valuable resource for mathematicians, signal processingengineers, and scientists who wish to learn about wavelet theoryand Fourier analysis on an elementary level.
Mathematics for Physicists Jul 24 2019 Introduces fundamental concepts and computational methods of mathematics from the perspective of physicists.
The Cambridge History of Science: Volume 6, The Modern Biological and Earth Sciences Jul 16 2021 This book in the highly respected Cambridge History of Science series is devoted to the history of the life and earth sciences since 1800. It provides comprehensive and authoritative surveys of historical thinking on major developments in these areas of science, on the social and cultural milieus in which the knowledge was generated, and on the wider impact of the major theoretical and practical innovations. The articles are written by acknowledged experts who provide concise accounts of the latest historical thinking coupled with guides to the most important recent literature. In addition to histories of traditional sciences, the book covers the emergence of newer disciplines such as genetics, biochemistry and geophysics. The interaction of scientific techniques with their practical applications in areas such as medicine is a major focus of the book, as is its coverage of controversial areas such as science and religion, and environmentalism.
Water Works Nov 19 2021 Water Works is a field-tested physical science unit for high-ability learners in grades K-1. This unit engages students in scientific investigation as they closely observe and experiment with water. Students are transformed into scientists who notice, react to, reflect on, and discover more about force and change. The concept of change is reinforced while students explore the characteristics of items that

sink and float, experiment to make objects float, and examine how materials interact with water. Water Works, a Project Clarion Science Unit for Primary Grades, utilizes a hands-on, constructivist approach that allows children to build their knowledge base and skills while they explore science topics through play and planned investigations.

Essential Mathematical Methods for the Physical Sciences Jun 02 2020 The mathematical methods that physical scientists need for solving substantial problems in their fields of study are set out clearly and simply in this tutorial-style textbook. Students will develop problem-solving skills through hundreds of worked examples, self-test questions and homework problems. Each chapter concludes with a summary of the main procedures and results and all assumed prior knowledge is summarized in one of the appendices. Over 300 worked examples show how to use the techniques and around 100 self-test questions in the footnotes act as checkpoints to build student confidence. Nearly 400 end-of-chapter problems combine ideas from the chapter to reinforce the concepts. Hints and outline answers to the odd-numbered problems are given at the end of each chapter, with fully-worked solutions to these problems given in the accompanying Student Solutions Manual. Fully-worked solutions to all problems, password-protected for instructors, are available at www.cambridge.org/essential.

Models as Mediators Jan 10 2021 Edited collection examining the ways in which models are used in modern science.

On the Connexion of the Physical Sciences Jun 26 2022

Mathematical Methods in the Physical Sciences Sep 29 2022 Now in its third edition, Mathematical Concepts in the Physical Sciences provides a comprehensive introduction to the areas of mathematical physics. It combines all the essential math concepts into one compact, clearly written reference.

The Cambridge History of Science: Volume 5, The Modern Physical and Mathematical Sciences Apr 12 2021 A new and comprehensive examination of the history of the modern physical and mathematical sciences.

Physical Geography Aug 17 2021

On the Connection of the Physical Sciences Jan 22 2022

Mechanism of the Heavens Apr 24 2022

Physics and Psychics Jun 14 2021 Noakes' revelatory analysis of Victorian scientists' fascination with psychic phenomena connects science, the occult and religion in intriguing new ways.

Personal Recollections, from Early Life to Old Age, of Mary Somerville Mar 31 2020

Mary Somerville and the Cultivation of Science, 1815–1840 Mar 24 2022 Among the myriad of changes that took place in Great Britain in the first half of the nineteenth century, many of particular significance to the historian of science and to the social historian are discernible in that small segment of British society drawn together by a shared interest in natural phenomena and with sufficient leisure or opportunity to investigate and ponder them. This group, which never numbered more than a mere handful in comparison to the whole population, may rightly be characterized as 'scientific'. They and their successors came to occupy an increasingly important place in the intellectual, educational, and developing economic life of the nation. Well before the arrival of mid-century, natural philosophers and inventors were generally hailed as a source of national pride and of national prestige. Scientific society is a feature of nineteenth-century British life, the best being found in London, in the universities, in Edinburgh and Glasgow, and in a few scattered provincial centres.

Nineteenth-Century Poetry and the Physical Sciences Feb 20 2022 Poetical Matter examines the two-way exchange of language and methods between nineteenth-century poetry and the physical sciences. The book argues that poets such as William Wordsworth, Mathilde Blind, and Thomas Hardy identified poetry as an experimental investigation of nature's materiality. It also explores how science writers such as Humphry Davy, Mary Somerville, and John Tyndall used poetry to formulate their theories, to bestow cultural legitimacy on the emerging disciplines of chemistry and physics, and to communicate technical knowledge to non-specialist audiences. The book's chapters show how poets and science writers relied on a set of shared terms ("form," "experiment," "rhythm," "sound," "measure") and how the meaning of those terms was debated and reimagined in a range of different texts. "A stimulating analysis of nineteenth-century poetry and physics. In this groundbreaking study, Tate turns to sound to tease out fascinating continuities across scientific inquiry and verse. Reflecting that 'the processes of the universe' were themselves 'rhythmic,' he shows that a wide range of poets and scientists were thinking through undulatory motion as a space where the material and the immaterial met. 'The motion of waves,' Tate demonstrates, was 'the exemplary form in the physical sciences.' Sound waves, light, energy, and poetic meter were each characterized by a 'process of undulation,' that could be understood as both a physical and a formal property. Drawing on work in new materialism and new formalism, Tate illuminates a nineteenth-century preoccupation with dynamic patterning that characterizes the undulatory as (in John Herschel's words) not 'things, but forms.'" —Anna Henchman, Associate Professor of English at Boston University, USA "This impressive study consolidates and considerably advances the field of physics and poetry studies. Moving easily and authoritatively between canonical and scientist poets, Nineteenth-Century Poetry and the Physical Sciences draws scientific thought and poetic form into telling relation, disclosing how they were understood variously across the nineteenth century as both comparable and competing ways of knowing the physical world. Clearly written and beautifully structured, Nineteenth-Century Poetry and the Physical Sciences is both scholarly and accessible, a fascinating and indispensable contribution to its field." —Daniel Brown, Professor of English at the University of Southampton, UK "Essential reading for Victorianists. Tate's study of nineteenth-century poetry and science reconfigures debate by insisting on the equivalence of accounts of empirical fact and speculative theory rather than their antagonism. The undulatory rhythms of the universe and of poetry, the language of science and of verse, come into new relations. Tate brilliantly re-reads Coleridge, Tennyson, Mathilde Blind and Hardy through their explorations of matter and ontological reality. He also addresses contemporary theory from Latour to Jane Bennett." — Isobel Armstrong, Emeritus Professor of English at Birkbeck, University of London, UK

Vulnerability Assessment of Physical Protection Systems Oct 26 2019 Vulnerability Assessment of Physical Protection Systems guides the reader through the topic of physical security with a unique, detailed and scientific approach. The book describes the entire vulnerability assessment (VA) process, from the start of planning through final analysis and out brief to senior management. It draws heavily on the principles introduced in the author's best-selling Design and Evaluation of Physical Protection Systems and allows readers to apply those principles and conduct a VA that is aligned with system objectives and achievable with existing budget and personnel resources. The text covers the full spectrum of a VA, including negotiating tasks with the customer; project management and planning of the VA; team membership; and step-by-step details for performing the VA, data collection and analysis. It also provides important notes on how to use the VA to suggest design improvements and generate multiple design options. The text ends with a discussion of how to out brief the results to senior management in order to gain their support and demonstrate the return on investment of their security dollar. Several new tools are introduced to help readers organize and use the information at their sites and allow them to mix the physical protection system with other risk management measures to reduce risk to an acceptable level at an affordable cost and with the least operational impact. This book will be of interest to physical security professionals, security managers, security students and professionals, and government officials. Guides the reader through the topic of physical security doing so with a unique, detailed and scientific approach Takes the reader from beginning to end and step-by-step through a Vulnerability Assessment Over 150 figures and tables to illustrate key concepts

On Molecular and Microscopic Science Aug 05 2020

Project Hail Mary Oct 07 2020 #1 NEW YORK TIMES BESTSELLER • From the author of The Martian, a lone astronaut must save the earth from disaster in this "propulsive" (Entertainment Weekly), cinematic thriller full of suspense, humor, and fascinating science—in development as a major motion picture starring Ryan Gosling. HUGO AWARD FINALIST • ONE OF THE YEAR'S BEST BOOKS: Bill Gates, GatesNotes, New York

Public Library, Parade, Newsweek, Polygon, Shelf Awareness, She Reads, Kirkus Reviews, Library Journal • "An epic story of redemption, discovery and cool speculative sci-fi."—USA Today "If you loved The Martian, you'll go crazy for Weir's latest."—The Washington Post Ryland Grace is the sole survivor on a desperate, last-chance mission—and if he fails, humanity and the earth itself will perish. Except that right now, he doesn't know that. He can't even remember his own name, let alone the nature of his assignment or how to complete it. All he knows is that he's been asleep for a very, very long time. And he's just been awakened to find himself millions of miles from home, with nothing but two corpses for company. His crewmates dead, his memories fuzzily returning, Ryland realizes that an impossible task now confronts him. Hurtling through space on this tiny ship, it's up to him to puzzle out an impossible scientific mystery—and conquer an extinction-level threat to our species. And with the clock ticking down and the nearest human being light-years away, he's got to do it all alone. Or does he? An irresistible interstellar adventure as only Andy Weir could deliver, Project Hail Mary is a tale of discovery, speculation, and survival to rival The Martian—while taking us to places it never dreamed of going.

Visions of Science Mar 12 2021 The first half of the nineteenth century witnessed an extraordinary transformation in British political, literary, and intellectual life. There was widespread social unrest, and debates raged regarding education, the lives of the working class, and the new industrial, machine-governed world. At the same time, modern science emerged in Europe in more or less its current form, as new disciplines and revolutionary concepts, including evolution and the vastness of geologic time, began to take shape. In Visions of Science, James A. Secord offers a new way to capture this unique moment of change. He explores seven key books—among them Charles Babbage's Reflections on the Decline of Science, Charles Lyell's Principles ofGeology, Mary Somerville's Connexion of the Physical Sciences, and Thomas Carlyle's Sartor Resartus—and shows how literature that reflects on the wider meaning of science can be revelatory when granted the kind of close reading usually reserved for fiction and poetry. These books considered the meanings of science and its place in modern life, looking to the future, coordinating and connecting the sciences, and forging knowledge that would be appropriate for the new age. Their aim was often philosophical, but Secord shows it was just as often imaginative, projective, and practical: to suggest not only how to think about the natural world but also to indicate modes of action and potential consequences in an era of unparalleled change. Visions of Science opens our eyes to how genteel ladies, working men, and the literary elite responded to these remarkable works. It reveals the importance of understanding the physical qualities of books and the key role of printers and publishers, from factories pouring out cheap compendia to fashionable publishing houses in London's West End. Secord's vivid account takes us to the heart of an information revolution that was to have profound consequences for the making of the modern world.

Mathematical Methods in Physics Sep 05 2020 Physics has long been regarded as a wellspring of mathematical problems. Mathematical Methods in Physics is a self-contained presentation, driven by historic motivations, excellent examples, detailed proofs, and a focus on those parts of mathematics that are needed in more ambitious courses on quantum mechanics and classical and quantum field theory. Aimed primarily at a broad community of graduate students in mathematics, mathematical physics, physics and engineering, as well as researchers in these disciplines.

On the Connexion of the Physical Sciences Nov 07 2020

Nineteenth-Century Poetry and the Physical Sciences Jun 22 2019 Poetical Matter examines the two-way exchange of language and methods between nineteenth-century poetry and the physical sciences. The book argues that poets such as William Wordsworth, Mathilde Blind, and Thomas Hardy identified poetry as an experimental investigation of nature's materiality. It also explores how science writers such as Humphry Davy, Mary Somerville, and John Tyndall used poetry to formulate their theories, to bestow cultural legitimacy on the emerging disciplines of chemistry and physics, and to communicate technical knowledge to non-specialist audiences. The book's chapters show how poets and science writers relied on a set of shared terms ("form," "experiment," "rhythm," "sound," "measure") and how the meaning of those terms was debated and reimagined in a range of different texts.

Physical Science Dec 09 2020

The Invention of Physical Science Jul 28 2022 Modern physical science is constituted by specialized scientific fields rooted in experimental laboratory work and in rational and mathematical representations. Contemporary scientific explanation is rigorously differentiated from religious interpretation, although, to be sure, scientists sometimes do the philosophical work of interpreting the metaphysics of space, time, and matter. However, it is rare that either theologians or philosophers convincingly claim that they are doing the scientific work of physical scientists and mathematicians. The rigidity of these divisions and differentiations is relatively new. Modern physical science was invented slowly and gradually through interactions of the aims and contents of mathematics, theology, and natural philosophy since the seventeenth century. In essays ranging in focus from seventeenth-century interpretations of heavenly comets to twentieth-century explanations of tracks in bubble chambers, ten historians of science demonstrate metaphysical and theological threads continuing to underpin the epistemology and practice of the physical sciences and mathematics, even while they became disciplinary specialties during the last three centuries. The volume is prefaced by tributes to Erwin N. Hiebert, whose teaching and scholarship have addressed and inspired attention to these issues.

Statistical Data Analysis for the Physical Sciences May 26 2022 Data analysis lies at the heart of every experimental science. Providing a modern introduction to statistics, this book is ideal for undergraduates in physics. It introduces the necessary tools required to analyse data from experiments across a range of areas, making it a valuable resource for students. In addition to covering the basic topics, the book also takes in advanced and modern subjects, such as neural networks, decision trees, fitting techniques, and issues concerning limit or interval setting. Worked examples and case studies illustrate the techniques presented, and end-of-chapter exercises help test the reader's understanding of the material.

Before Big Science May 02 2020 In this book, Mary Jo Nye traces the social and intellectual history of the physical sciences from the early nineteenth century to the beginning of the Second World War. Nye examines the sweeping transformation of scientific institutions and professions during the period and the groundbreaking experiments and scientific investigations that fueled that change, from the earliest investigations of molecular chemistry and field dynamics to the revolutionary breakthroughs of quantum mechanics, relativity theory, and nuclear science. Nye intersperses the narrative of these developments with profiles of key figures of modern science, from Dalton to Pasteur to Einstein to Bohr. Notable features of the book include an insightful analysis of the parallel trajectories of modern chemistry and physics and the work of scientists - such as John Dalton, Michael Faraday, Hermann von Helmholtz, Marie Curie, Ernest Rutherford, Dorothy Hodgkin, and Linus Pauling - who played prominent roles in the development of both disciplines.

Mathematics for Physical Science and Engineering Oct 19 2021 Mathematics for Physical Science and Engineering is a complete text in mathematics for physical science that includes the use of symbolic computation to illustrate the mathematical concepts and enable the solution of a broader range of practical problems. This book enables professionals to connect their knowledge of mathematics to either or both of the symbolic languages Maple and Mathematica. The book begins by introducing the reader to symbolic computation and how it can be applied to solve a broad range of practical problems. Chapters cover topics that include: infinite series; complex numbers and functions; vectors and matrices; vector analysis; tensor analysis; ordinary differential equations; general vector spaces; Fourier series; partial differential equations; complex variable theory; and probability and statistics. Each important concept is clarified to students through the use of a simple example and often an illustration. This book is an ideal reference for upper level undergraduates in physical chemistry, physics, engineering, and advanced/applied mathematics courses. It will also appeal to graduate physicists, engineers and related specialties seeking to address practical problems in physical science. Clarifies each important concept to students through the use of a simple example and often an illustration Provides quick-reference for students through multiple appendices, including an overview of terms in most commonly used applications (Mathematica, Maple) Shows how symbolic computing enables solving a broad range of practical problems

Physical Properties of Materials, Third Edition Sep 25 2019 Designed for advanced undergraduate students and as a useful reference book for materials researchers, Physical Properties of Materials, Third Edition establishes the principles that control the optical, thermal, electronic, magnetic, and mechanical properties of materials. Using an atomic and molecular approach, this introduction to materials science offers readers a wide-ranging survey of the field and a basis to understand future materials. The author incorporates comments on applications of materials science, extensive references to the contemporary and classic literature, and 350 end-of-chapter problems. In addition, unique tutorials allow students to apply the principles to understand applications, such as photocopying, magnetic devices, fiber optics, and more. This fully revised and updated Third Edition includes new materials and processes, such as topological insulators, 3-D printing, and more information on nanomaterials. The new edition also now adds Learning Goals at the end of each chapter and a Glossary with more than 500 entries for quick reference.

On the Connection of the Physical Sciences Aug 24 2019 This work has been selected by scholars as being culturally important and is part of the knowledge base of civilization as we know it. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. To ensure a quality reading experience, this work has been proofread and republished using a format that seamlessly blends the original graphical elements with text in an easy-to-read typeface. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant.

Before Big Science Dec 21 2021 Notable features of the book include an insightful analysis of the parallel trajectories of modern chemistry and physics and the work of scientists - such as John Dalton, Michael Faraday, Hermann von Helmholtz, Marie Curie, Ernest Rutherford, Dorothy Hodgkin, and Linus Pauling - who played prominent roles in the development of both disciplines.

Invitation to Invent May 14 2021 Invitation to Invent, a physical science unit for grades 3-4, engages students in investigations and observations that support their learning about simple machines and their uses. Students explore force, motion, and friction as they learn about the six simple machines and how they are put together to form compound machines. Invitation to Invent was developed by the Center for Gifted Education at The College of William and Mary to offer advanced curriculum supported by years of research. The Center's materials have received national recognition from the United States Department of Education and the National Association for Gifted Children, and they are widely used both nationally and internationally. Each of the books in this series offers curriculum that focuses on advanced content and higher level processes. The science units contain simulations of real-world problems, and students experience the work of real science by using data-handling skills, analyzing information, and evaluating results. The mathematics units provide sophisticated ideas and concepts, challenging extensions, higher order thinking skills, and opportunities for student exploration based on interest. These materials are a must for any teacher seeking to challenge and engage learners and increase achievement. Grades 3-4

Mathematical Methods in the Physical Sciences Oct 31 2022 Market_Desc: · Physicists and Engineers· Students in Physics and Engineering Special Features: · Covers everything from Linear Algebra, Calculus, Analysis, Probability and Statistics, to ODE, PDE, Transforms and more· Emphasizes intuition and computational abilities· Expands the material on DE and multiple integrals· Focuses on the applied side, exploring material that is relevant to physics and engineering· Explains each concept in clear, easy-to-understand steps About The Book: The book provides a comprehensive introduction to the areas of mathematical physics. It combines all the essential math concepts into one compact, clearly written reference. This book helps readers gain a solid foundation in the many areas of mathematical methods in order to achieve a basic competence in advanced physics, chemistry, and engineering.

Maria Mitchell and the Sexing of Science Jan 28 2020 New England blossomed in the nineteenth century, producing a crop of distinctively American writers along with distinguished philosophers and jurists, abolitionists and scholars. A few of the female stars of this era—Emily Dickinson, Margaret Fuller, and Susan B. Anthony, for instance—are still appreciated, but there are a number of intellectual women whose crucial roles in the philosophical, social, and scientific debates that roiled the era have not been fully examined. Among them is the astronomer Maria Mitchell. She was raised in isolated but cosmopolitan Nantucket, a place brimming with enthusiasm for intellectual culture and hosting the luminaries of the day, from Ralph Waldo Emerson to Sojourner Truth. Like many island girls, she was encouraged to study the stars. Given the relative dearth of women scientists today, most of us assume that science has always been a masculine domain. But as Renée Bergland reminds us, science and humanities were not seen as separate spheres in the nineteenth century; indeed, before the Civil War, women flourished in science and mathematics, disciplines that were considered less politically threatening and less profitable than the humanities. Mitchell apprenticed with her father, an amateur astronomer; taught herself the higher math of the day; and for years regularly "swept" the clear Nantucket night sky with the telescope in her rooftop observatory. In 1847, thanks to these diligent sweeps, Mitchell discovered a comet and was catapulted to international fame. Within a few years she was one of America's first professional astronomers; as "computer of Venus"—a sort of human calculator—for the U.S. Navy's Nautical Almanac, she calculated the planet's changing position. After an intellectual tour of Europe that included a winter in Rome with Sophia and Nathaniel Hawthorne, Mitchell was invited to join the founding faculty at Vassar College, where she spent her later years mentoring the next generation of women astronomers. Tragically, opportunities for her students dried up over the next few decades as the increasingly male scientific establishment began to close ranks. Mitchell protested this cultural shift in vain. "The woman who has peculiar gifts has a definite line marked out for her," she wrote, "and the call from God to do his work in the field of scientific investigation may be as imperative as that which calls the missionary into the moral field or the mother into the family . . . The question whether women have the capacity for original investigation in science is simply idle until equal opportunity is given them." In this compulsively readable biography, Renée Bergland chronicles the ideological, academic, and economic changes that led to the original sexing of science—now so familiar that most of us have never known it any other way. "The best thing in its line since Dava Sobel's Longitude. Maria Mitchell and the Sexing of Science tells a great, if too little known, story of an intellectual woman in 19th century New England. And it is beautifully told: I simply could not put it down. Anyone who cares about women's education in America should read this compelling and indispensable book." —Robert D. Richardson, author of Henry Thoreau: A Life of the Mind, Emerson: The Mind on Fire, and William James: In the Maelstrom of American Modernism "Renée Bergland recounts the story of Maria Mitchell's life and work in glorious and careful detail. One feels and hears the sounds of Mitchell's native Nantucket, her adopted Vassar, and comes to understand how one of the 'gentler sex' advanced astronomy in her day." —Londa Schiebinger, author of Has Feminism Changed Science?

Data Analysis for Physical Scientists Feb 08 2021 Introducing data analysis techniques to help undergraduate students develop the tools necessary for studying and working in the physical sciences.

Linear Algebra as an Introduction to Abstract Mathematics Sep 17 2021 This is an introductory textbook designed for undergraduate mathematics majors with an emphasis on abstraction and in particular, the concept of proofs in the setting of linear algebra. Typically such a student would have taken calculus, though the only prerequisite is suitable mathematical grounding. The purpose of this book is to bridge the gap between the more conceptual and computational oriented undergraduate classes to the more abstract oriented classes. The book begins with systems of linear equations and complex numbers, then relates these to the abstract notion of linear maps on finite-dimensional vector spaces, and covers diagonalization, eigenspaces, determinants, and the Spectral Theorem. Each chapter concludes with both proof-writing and computational exercises.